

NOTEGRAM

D. Sparks

to: Rodney Stockton

Subject: Inorganic Sample Results

Enclosed are the sampling and analysis request, sampling report, the analysis report, inorganic and classical results, and a QC summary for the organic data. Please note the QC concerns in the QC summary.

These reports are confirmations of a telephone conversation between Billy Sailer and yourself on 1/13/87. If I may be of any further assistance please call me at 8-0470.

Ref #5
(4 pages)

Sampling/Analysis Request #
Page _____ of _____
Priority _____ Approval _____

Charge # ~~100-70000~~
Work Release required: Y or N

by: 1/6/93
(date)

Intended Data Use: See CA 10228 Plan # 10030

J-152

ENVIRONMENTAL CHEMISTRY SAMPLING REPORT

Date 11-20-63

Requestor D.C. S. 00 725

Sampling Report :

Sampling/Analysis Request # _____

Work/QA Plan - 0024

Date of Sample Collection: 11-24-85

GC Summary:

Sampling Point(s) Location ARA II 1-21.

Deviations from Work/QA Plan UON's

Tests Conducted:

[illegible]

Field QC Samples Submitted used 1 total duplicate and USA trip
blank F 0029-2 for vi-ss.

Field Data The initial pH reading was 6.5 and the final was 6.5
also the computer data average had 20-25 mK reading from
the EV

Field Observations Spice samples were over limit quantity specifications
We were requested to have a DIT drawn to substantiate

Samplers KC Wright
R. J. K. Lee

Technical Leader J. A. [Signature]

ENVIRONMENTAL CHEMISTRY
ANALYSIS REPORT

Page 1 of 1

Date 01/12/84

Requestor U.S. EPA

Analysis Report # _____

Sampling/Analysis Request # _____

Work/QA Plan # 0029

Lab #	Field #	Date rec'd	Date Prepared	Date analysed	Holding Time
MT04844	0029-1	01/12/84	01/07/84	01/13/84	4H cold
MT04845	0029-2	✓	✓	✓	✓
MT04846	0029-3 APL	✓	NA	01/13/84	12 Hours
MT04847	0029-4 APL	✓	✓	✓	✓
MT04848	0029-5	✓	NA	01/13/84	3 days

Requested Analyses & Methodology:

Lab #	Analytes	Method	Comments
MT04848	Metals (EPA)	EPA 821.1-A 30.0	results reported by telecon 01/13/84
MT04849	✓	✓	✓
MT04850	VOA	USEPA Concom Lab	results reported in letter 01/13/84
MT04851	VOA Tri-Blank	✓	✓
MT04852	Sulfate	EPA 821.1-A 30.0	results received by telecon 01/13/84

Reviews and Approvals:

Sample Preparation/Extraction
(Responsible Persons)

John F. Williams
Thomas J. Thomas

Sample Analysis
(Responsible Persons)

J.F.W.
Thomas J. Thomas
John F. Williams

Technical Leader(s)

Rodney Strickland

Project Manager
QA Coordinator

Thomas J. Thomas

ENVIRONMENTAL CHEMISTRY
ANALYSIS REPORT - INORGANIC/CLASSICAL

Page of

Date 01/15/87

Requestor D. S. Jones

Analysis Report #

Sampling/Analysis Request #

Analysis Results

Analyst SP. S. C. Jones

Lab #

Analyte(s)	Units	MIØ4842	6h8h4911		MIØ4852						
Arsenic	mg/l	<0.05	<0.05		-						
Barium	mg/l	0.03	0.02		-						
Cadmium	mg/l	0.05	0.04		-						
Chromium	mg/l	0.72	0.77		-						
Copper	mg/l	0.59	0.29		-						
Lead	mg/l	0.39	0.32		-						
Mercury	mg/l	0.003	0.002		-						
Nickel	mg/l	0.14	0.13		-						
Selenium	mg/l	<0.12	<0.12		-						
Silver Q	mg/l	<0.03	<0.03		-						
Zinc	mg/l	1.93	1.72		-						
Thallium	mg/l	<0.24	<0.24		-						
Sulfate Q	mg/l	-	-		140						

For associated QC data, see QC Summary #

Flags: U - below detection limits
Q - Data quality concern (see QC Summary)

ENVIRONMENTAL CHEMISTRY
QC SUMMARY

Date 07/15/93 Requestor D. Edwards Analysis Report # _____

Sampling/Analysis Request # _____

Sampling QC	Field QC Sample	Results
(Sampling Report # _____)	<u>Matrix replicates</u>	<u>relative percent differences less than 15% for all elements</u>
		<u>except cadmium (26%)</u>

Comments Copper data is included for informational purposes only - it is not a required analyte for EP Toxicity analysis

Analysis QC

QC Sample	Results
<u>Prep blank</u>	<u>All elements < RDL (required detection limit)</u>
<u>Matrix Standard</u>	<u>% Recoveries: As 85%; Cd 25%; Se 23%; Pb 24%; Cr 90%;</u>
<u>Matrix Spike</u>	<u>Ag 15%; Ba 93%; sulfate 96%; Hg 32%</u>
<u>Calibration Check</u>	<u>% Recoveries: As 90%; Cd 84%; Se 73%; Pb 27%; Cr 96%;</u>
<u>Duplicate Sample (Laboratory)</u>	<u>Ag 87%; sulfate 0%</u>
	<u>all elements within $\pm 10\%$ of true value; SO₄ = 4% true value; Hg = 15%</u>
	<u>Relative % differences: sulfate 13% all others within $\pm 10\%$</u>

Comments All QC results are in control except for silver and sulfate. Very poor recoveries for both analytes were observed for this sample matrix. No silver was observed in either field sample - had it been present in high amounts in the original samples (e.g. 5 mg/l) it is most likely that some of the silver would have been noticed in the prepared samples. With this qualification, the samples from the ARA tank pass the EP Toxicity Test.

INTEROFFICE CORRESPONDENCE

Date: January 7, 1988
To: D. Sparks
From: P. Pink *Pink*
Subject: ARA I TANK SAMPLE FOR VOLATILE ORGANIC ANALYSIS SDG #MI017 -
PNP-03-88

The ARA I tank sample number MI04850 was sampled and received 11/24/87 and was analyzed on 12/10/87, using GC/MS instrumentation following USEPA Contract Laboratory Program protocols. The sample was accompanied by a travel blank, sample number MI04851.

Compounds which could be ascribed to the sample are listed in Table I. Low levels of 1,1,1-trichloroethane (TCA) and toluene were detected in the travel blank and 1,1,1-trichloroethane was also detected in the method blank; both of these compounds were also detected in the sample. However, levels detected in the sample of TCA and toluene are significantly greater than the levels detected in the blanks and are attributable to the sample rather than background contamination.

All quality control/quality assurance analyses and samples run associated with this sample were within USEPA CLP protocol guidelines. There were no non-target compound list substances detected in any of these samples.

If you have any questions, please call Penny Pink at 6-2733.

en

cc: C. W. Frank
G. S. Groenewold
P. N. Pink File

ref #6

US DOE ON-SITE RADIOACTIVE MATERIAL SHIPMENT RECORD



Shipment From: AKA-E 626

Log No. N/A

IO F 5480.1B
(Rev. 05-87)

Reference

IO 5480.1 Chap III, Parts B and C

To: Janine Lessup / Mike Donaldson
AEA 633

Charge No. D46748703

Classified 1/4

Consignee Notified ☒

Individual Mike Donaldson

Date 11-24-87

Material(s) Shipped: radioactive samples

Physical Form: Solid ☐ Liquid ☒ Gas ☐

Principal

Nuclide(s) MFP Quantity (Ci) 4 x 10⁻³ Chemical Form Oxide in liquid

Total Curies 4 x 10⁻³

Type of shipment:

Limited Quantity ☐

Routine Shipment ☒

Special Shipment ☐

Controls:

Mode of Transport:

IO Services Contractor ☒

Facility Vehicle ☐

Small Package Delivery Service ☒

Private Vehicle ☐

Off-site Commercial Vehicle ☐

Rail ☐

Other ☐

Container Used:

Reusable ☒ Identify ☐

Current Approval: DOE ☐ DOT ☒ NRC ☐

Single Trip ☒ Describe: 2 Picnic Boxes

Size 9x9x14 Weight 20 lbs

FISSILE MATERIALS: Not Applicable ☒ Fissile Shipment ☐

Fissile Exempt ☐

U gms Pu gms Other gms

Controls:

(No more than packages may be loaded on any vehicle or storage location.)

ACCOUNTABLE NUCLEAR MATERIALS: Not Applicable ☒ Applicable ☐

DOE Form 741 No. Remarks:

Tie-downs Adequate ☒

Remarks: None

Radiation: (surface) mrem/hr (3 feet) 3 MREM/HR

Contamination: (Averaged over any 300 cm² Package Surface)

Beta-Gamma 4100 dis/min/100 cm²

Alpha 4100 dis/min/100 cm²

Additional Surveys: Vehicle ☒ Driver ☒ Other ☐

Remarks: None

LABELS

Empty ☐

Radioactive ☒

Other(s)

VEHICLE PLACARDS

None Required ☐

Radioactive ☒

Radioactive Special ☐

Others

Loader: Kelly C. Wright

Date 11-24-87

Safety Insp.: N/A

Date

Criticality Safety: N/A

Date

Rad. Surveyor: (Package(s)) Ray C. Miller

Date 11/24/87

(Driver and Vehicle) Ray C. Miller

Date 11/24/87

(Fissile and/or Accountable Nuclear Material only)

Safeguards Rep.: N/A

Date

Security Rep.: N/A

Date

Certification: Shipment prepared in accordance with IO 5480.1 Chap. III, parts B and C ☒

Originator: Kelly C. Wright

Date 11-24-87

Area Supervisor

Date 11-24-87

Shipment Accepted by: Lynn O. Shedd

Date 11-24-87

Time 13:10

(Driver's signature)

Shipment Received by: Mike Donaldson

Date 11/24/87

Time 1400

Surveys: Container ☒ Vehicle ☒ Driver ☒

Discrepancies Noted: None

Surveyed by: J. E. Arnold

Date 11-24-87

(DIRECTIONS ON REVERSE SIDE)

Table I. Volatile Organic Analysis of ARA I Tank Sample MI04850

<u>Compound</u>	<u>Concentration (ug/L)</u>
1,1-dichloroethene	640**
1,1-dichloroethane	100
Trans-1,2-dichloroethene	4*
1,1,1,-trichloroethane	10300**
trichloroethene	4800**
tetrachloroethene	4*
toluene	230**
xylene	10

* Values indicated are less than the contract required detection limits (CRQL) and are therefore estimated concentrations.

** These values are greater than the calibration range of the instrument and are therefore estimated concentrations.

INTEROFFICE CORRESPONDENCE

Date: May 27, 1988
To: J. S. Williams
From: D. W. Knight *Dean Knight*
Subject: CRITICALITY POTENTIAL FOR ARA-I WASTE STORAGE TANK - SF 729 -
DWKn-2-88

At your request we have investigated the potential for a criticality accident in the ARA-I-SF 729 Waste Storage Tank. Criticality was considered with the present contents of the tank and if the tank was flooded with water. The capacity of the tank is 1,000 gal.

The estimated maximum amount of U-235 that could be present in the tank is less than five (5) g. Because the minimum amount of U-235 required to reach a critical condition (optimum moderation and reflection) is 820 g, there is a large margin of safety in the calculations.

The calculations were based on the following events, assumptions, and analyses:

- (1) Prior to decontamination and cleanup of ARA-I which followed the TMI work the tank contents were agitated for an hour, pumped, and the contents shipped to ICPP.
- (2) The remaining content (sludge at the bottom of the tank) was sampled and analyzed for uranium and chemicals of interest. The measured uranium content in the sludge (bottom three inches of the tank) was 0.176 ± 0.011 g/l. Uranium-235 comprises 2.84 w/o of the uranium. The concentration of dissolved compounds containing uranium is very small (0.00125 g/l) and does not contribute significantly to the total U-235 content.
- (3) The volume of material in the bottom three inches of the tank (from the bottom of the discharge line to the bottom of the tank) is approximately 109 l. At the measured uranium concentration plus 1 sigma there would be approximately 0.6 g of U-235 in the sludge.
- (4) Some material from the final cleanup of the TMI experiment was discharged into the tank. If all of the dust (fuel material and other material from cutting fuel pins and cutting samples of melted reactor structural material mixed with fuel material) was transferred to the tank and retained in the tank following the final pumping of material there would be a maximum of 3.7 g of


J. S. Williams
May 27, 1988
DWKn-2-88
Page 2

U-235 contributed from the final TMI cleanup. It was assumed that all of the dust from the cutting operation was uranium (maximum enrichment of 2.98%).

The probability that all of the dust material was discharged to the tank is incredible. Most of the dust was vacuumed up or retained in the tank which holds the saw cooling liquid. The dust from these sources was disposed through other means. Also, much of the uranium transferred to the tank would probably have been removed during the final agitation and pumping. In addition none of the sludge was assumed to be pumped out even though the tank was agitated for more than one hour.

The maximum amount of U-235 calculated to be in the tank at this time will not exceed 5 g. This does not present a criticality hazard if the tank content remains as is or if it is filled with water or other good moderating medium.

jr

cc: C. G. Palmer
P. E. Ruhter 
D. C. Sparks
Central File
D. W. Knight File

RADIOLOGICAL CONTROL SURVEY FORM

ref #8

Loc. <u>1</u>	Location <u>AEA-16 - Radiochemical Tank (AEA-729)</u>	Date <u>09-28-91</u>	Time <u>1005</u>
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Radiochemical Requirements for CCR sites

SURFACE CONTAMINATION SURVEY

SMEARS <input type="checkbox"/>	WIPES <input type="checkbox"/>	DIRECT SCAN <input type="checkbox"/>	INST. TYPE <u>Scann.</u>	SER. NO. <u>142</u>
All smears	< 200 d/m/100 cm ² Beta-Gamma	YES <input type="checkbox"/>	NO <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	< detectable Alpha	YES <input type="checkbox"/>	NO <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
All wipes	< 100 c/m above bkgd. Beta-Gamma	YES <input type="checkbox"/>	NO <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	< detectable Alpha	YES <input type="checkbox"/>	NO <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Direct Scan	< 100 c/m above bkgd. Beta-Gamma	YES <input type="checkbox"/>	NO <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	< detectable Alpha	YES <input type="checkbox"/>	NO <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>

If NO, list those greater than the values indicated:

NO.	LOCATION	ACTIVITY (d/m/100 cm ²)	
		B - γ	Alpha
<u>1</u>	<u>AEA-729</u>	<u>1 mS/hr</u>	
	<u>Soil sample</u>	<u>< 200</u>	<u>< 20</u>

NO.	LOCATION	ACTIVITY (d/m/100 cm ²)	
		B - γ	Alpha

RADIATION SURVEY

All radiation readings < 5.0 mrem/hr YES ☒ NO ☐ N/A ☐

Inst. Type Riscan Ser. No. 130847

If NO, list those greater than 5.0 mrem/hr on the Survey Map

REMARKS

S.W.P. & dosimetry reqd. due to radiation reading in contaminated soil area

AIRBORNE ACTIVITY SURVEY

Area CAM Indication < alarm setpoint YES ☐ NO ☐ N/A ☒

PORTABLE SAMPLER DATA

TIME	LOCATION	B-γ	α	Net CPM ÷ EFF. = d/m	X 4.5 E-7 ÷ Sample Vol. (cc) = uCi/cc

HP Tech
Signature

C. F. Barker

Dose

Rec. (mrem)

0

HP Supervisor
Review

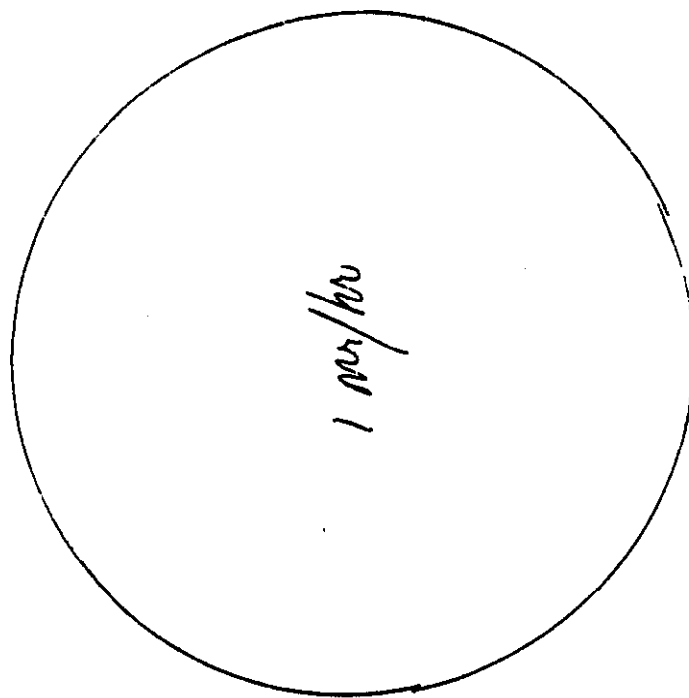
[Signature] 10-4-91

ref #8

Perimeter fence

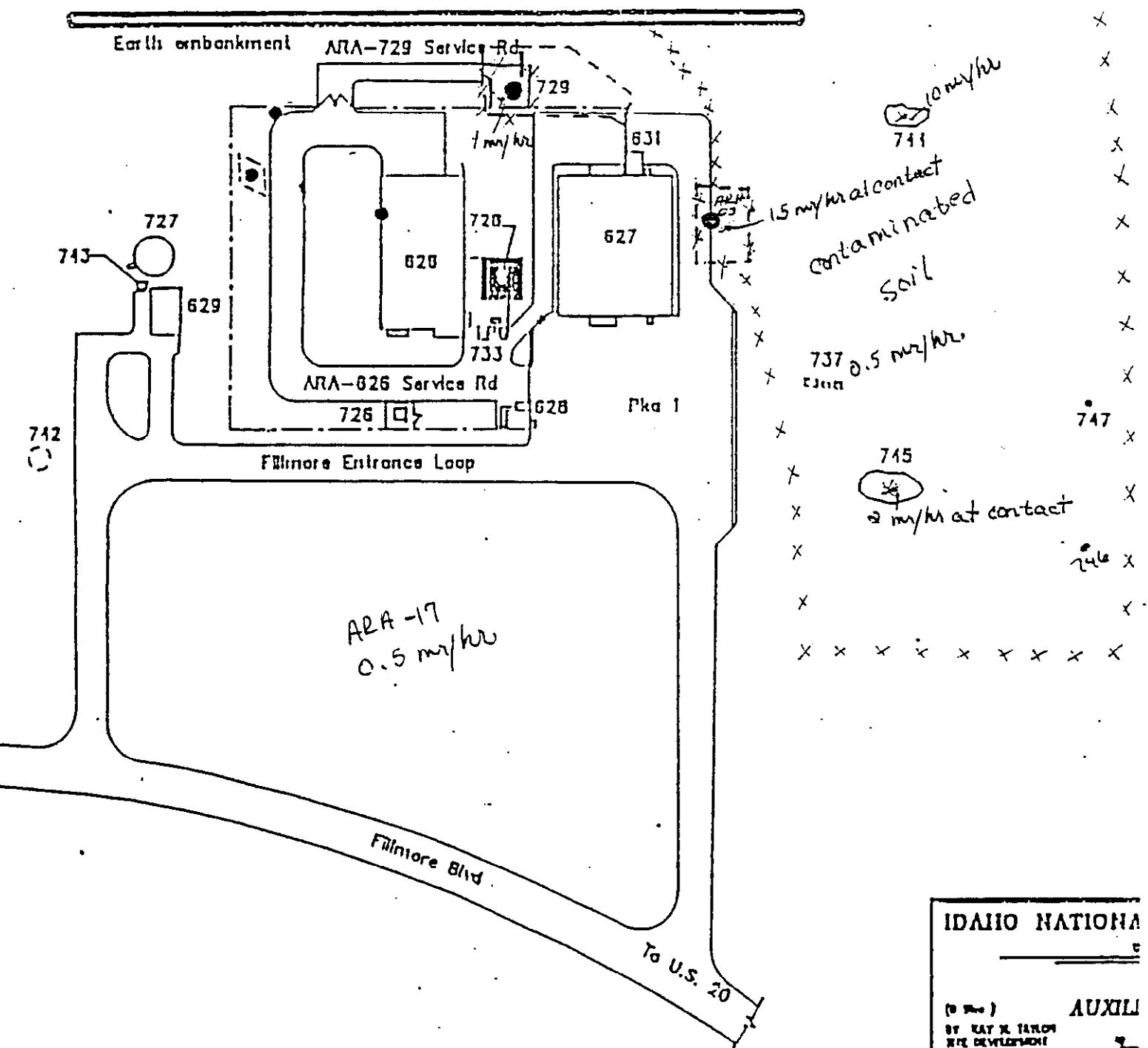
Perimeter fence

contaminated soil



Perimeter fence

Perimeter fence



IDAHO NATIONAL

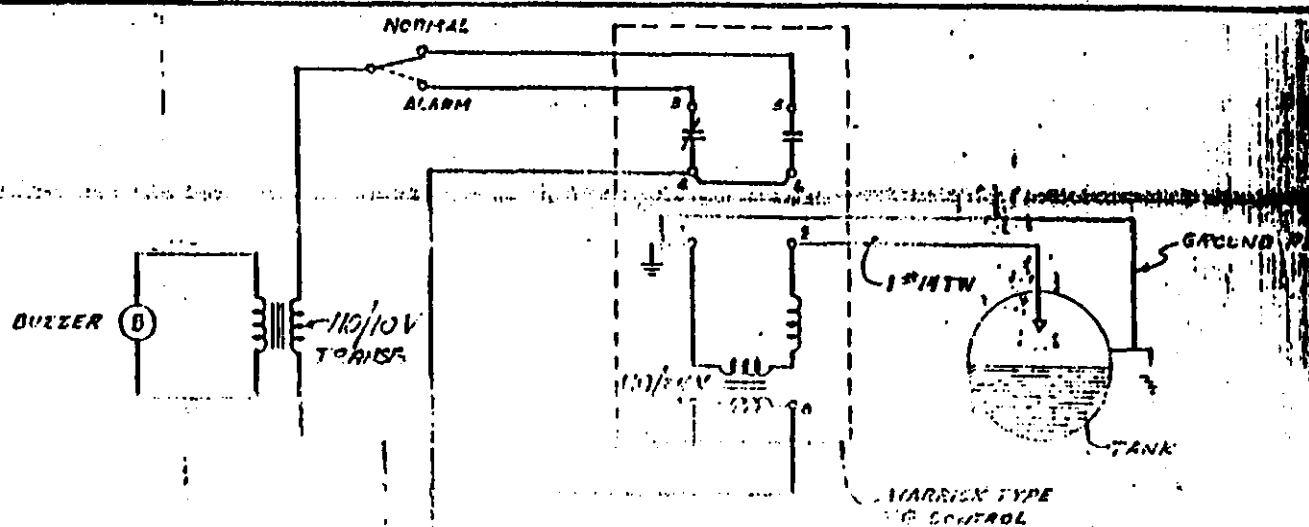
AUXILIARY

BY KAT M. TAYLOR

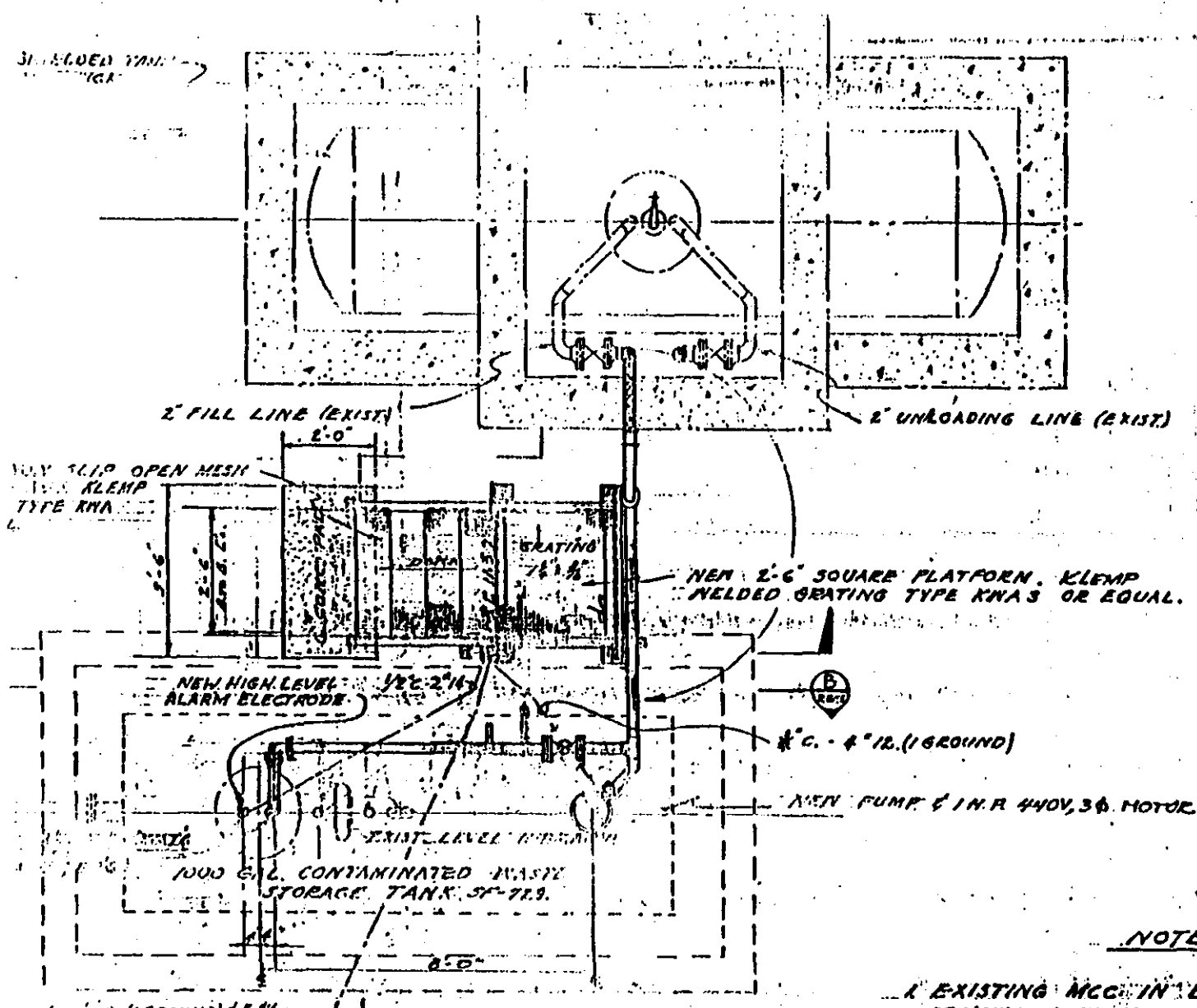
DATE DEVELOPMENT

PLANNING

9 10 11 12 13 14 15 16



TANK LEVEL ALARM SYSTEM - SCHEMATIC



NOTES.

1. EXISTING MCC IN EQUIPMENT ROOM ON ROOF OF MAIN BLDG IN CUBICLE 5A. PROVIDE NEW DRAINOUT TYPE COMBINATION MAGNETIC STARTER, SIZE, WITH 115/120 V. CONTROL TRANSFORMER. SEE SPECS.
2. PROVIDE NEW ISMRA SINGLE POLE CIRCUIT BREAKER IN EXISTING SPACE IN PANEL I.C.
3. EXACT LOCATION OF LEVEL ELECTRODE PANEL TO BE DETERMINED IN THE FIELD.
4. ALL UNDERGROUND CONDUITS SHALL BE IDENTIFIED WITH A DRAIN. SEE TYPICAL INSTALLATION ON DWG R-3.
5. LEVEL ALARM PANEL COMPONENTS: TYPE TC CONTROLLER, 1-POSITION SWITCH (MOUNTED IN CUBICLE), BUZZER, 1-TRANSFORMER, 1-RELAY, 1-115/120 V. CONTROL TRANSFORMER, 1-100/10 V. CONTROL TRANSFORMER, 1-100/10 V. CONTROL TRANSFORMER, 1-100/10 V. CONTROL TRANSFORMER.
6. THE ABOVE WORK SHALL BE COMPLETED BY THE TIME THE CUTTING IS TAKEN OFF THE TANK.

AS BUILT

F. C. THOMPSON CO.

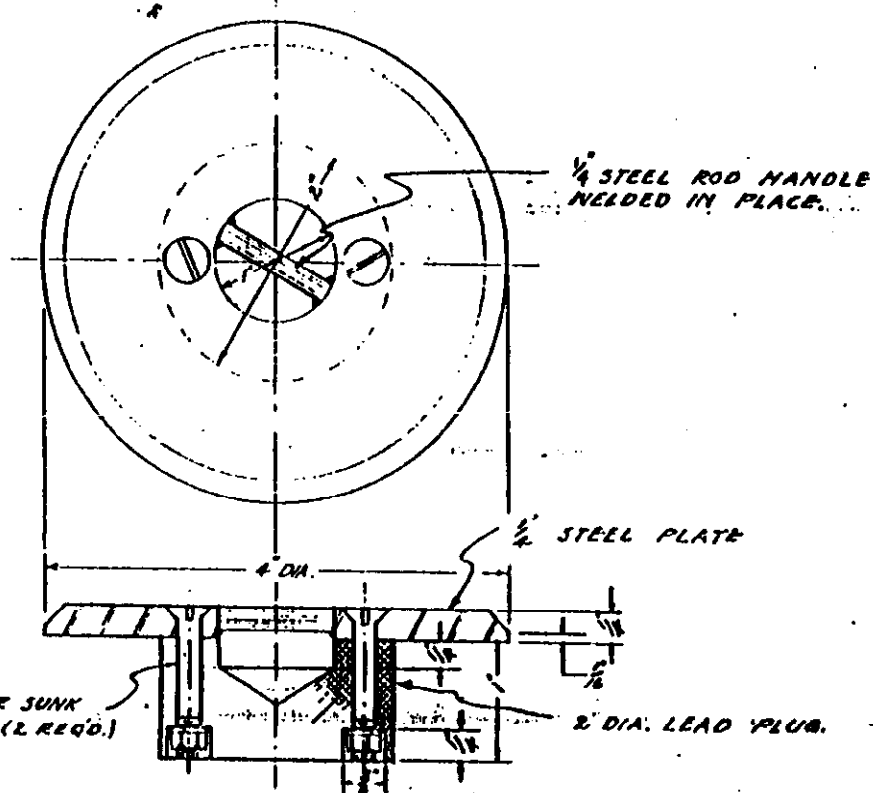
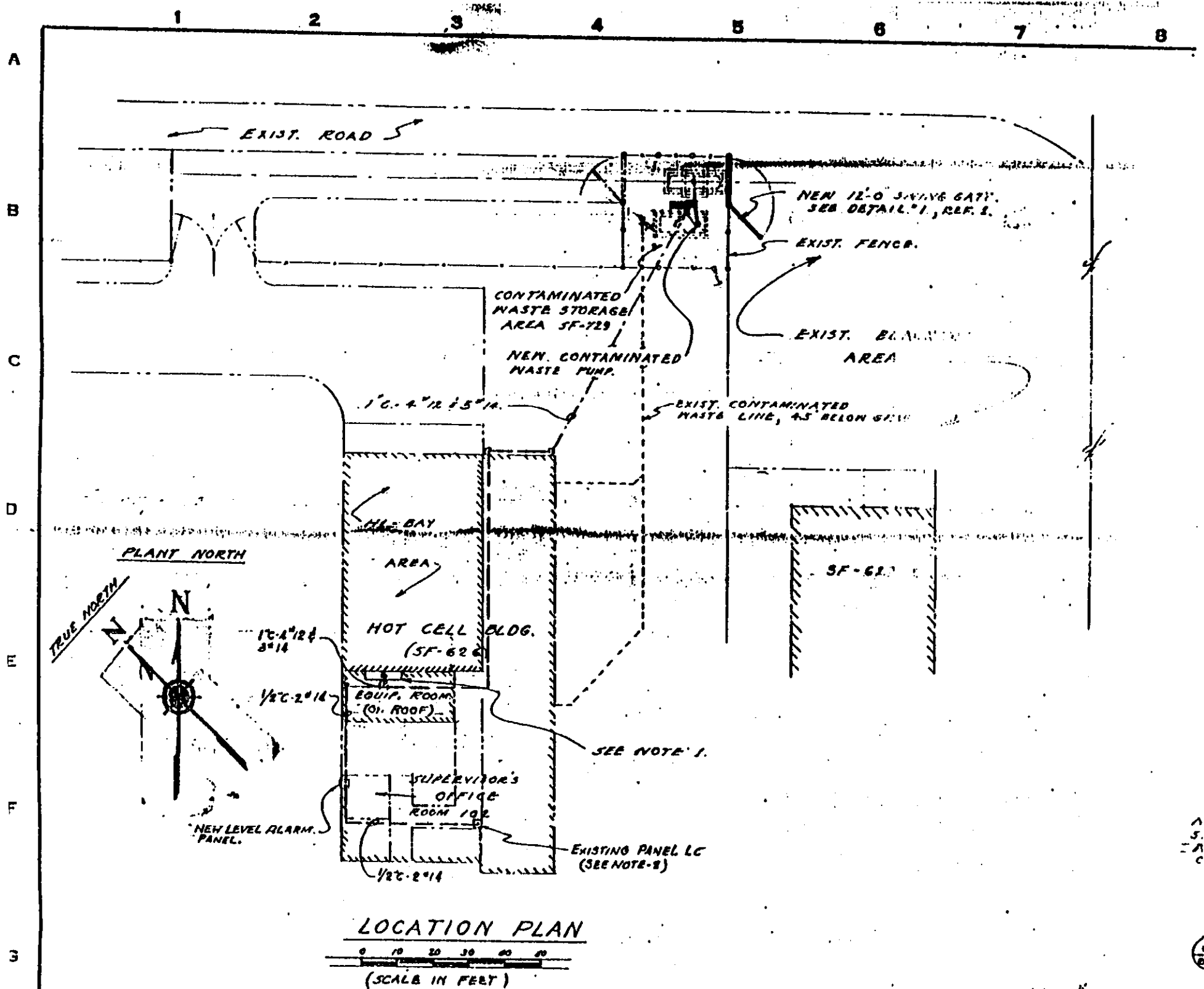
1000 E. 1000 S. SALT LAKE CITY, UTAH

NO. 1000 S. SALT LAKE CITY, UTAH

REF.	DESCRIPTION	DATE	BY	CHKD.
1	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
2	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
3	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
4	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
5	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
6	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
7	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
8	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
9	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
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11	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
12	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
13	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
14	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
15	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS
16	WASTE TANK EMPTYING SYSTEM	8-4-61	AS	AS

DATE	8-4-61
SCALE	AS SHOWN
DWG. NO.	823-AREA/SP-729-P&E-1
U. S. ATOMIC ENERGY COMMISSION	
IDAHO OPERATIONS OFFICE	
IDAHO FALLS, IDAHO	

LEVEL III



LEGEND

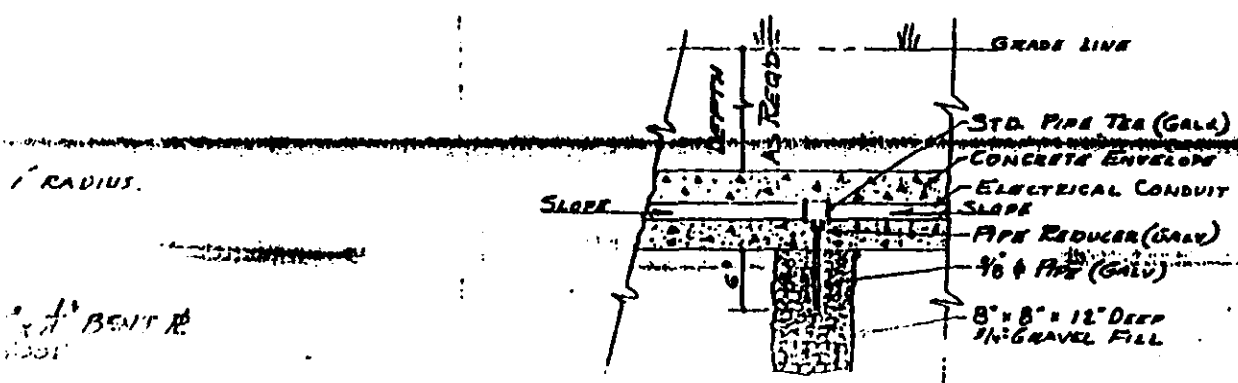
--- RIGID CONDUIT ENCASED AND BURIED 24\"/>

--- RIGID CONDUIT RUN EXPOSED ON BUILDING SURFACE.

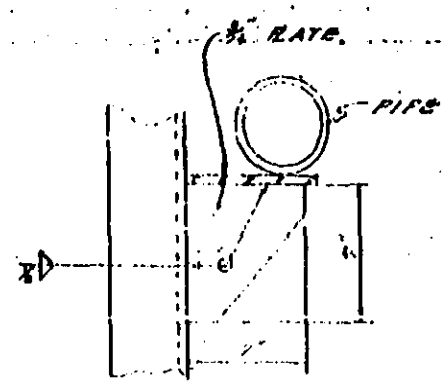
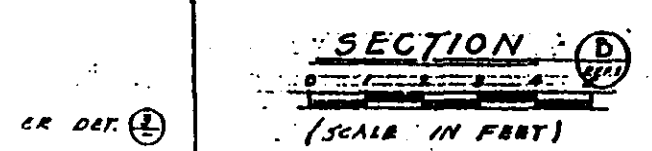
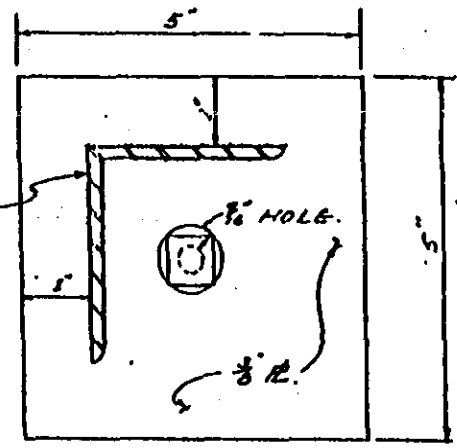
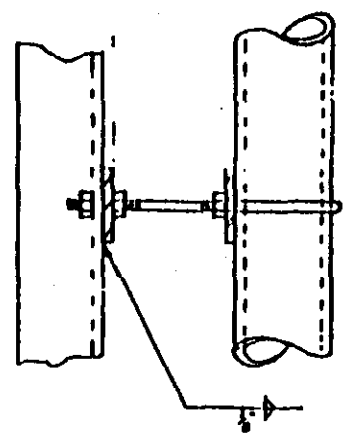
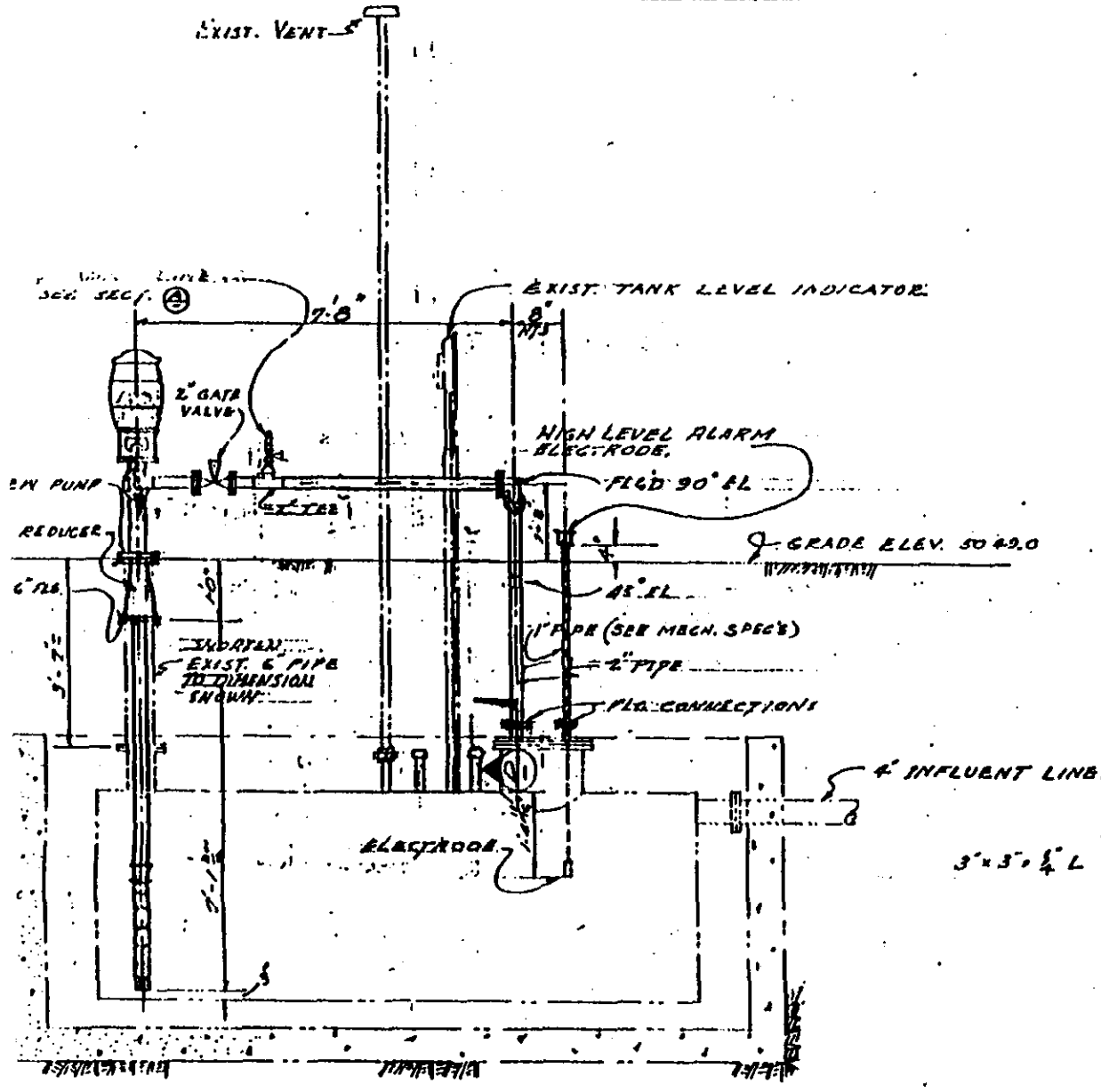
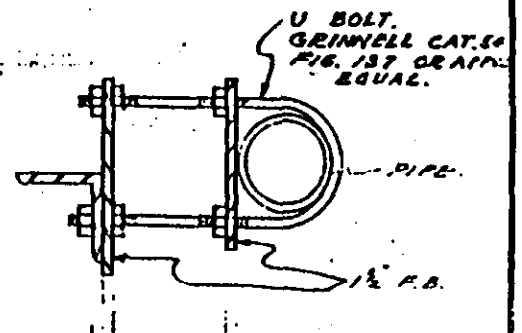
□ CAST JUNCTION BOX WITH MOUNT 12\"/>

□ STANDARD DUTY START-STOP PUSH STATION IN NEMA IV ENCLOSURE LOCKOUT ON STOP, MOUNT 34\"/>

GRADE.



UNDERGROUND CONDUIT DRAIN
TYPICAL INSTALLATION
NO SCALE



INDEX CODE NUMBER				
AREA	TYPE	CL	NO.	REVISION
068	0729	108	150052	

INDEX CODE NUMBER				
AREA	TYPE	CL	NO.	REVISION
068	0729	108	150052	

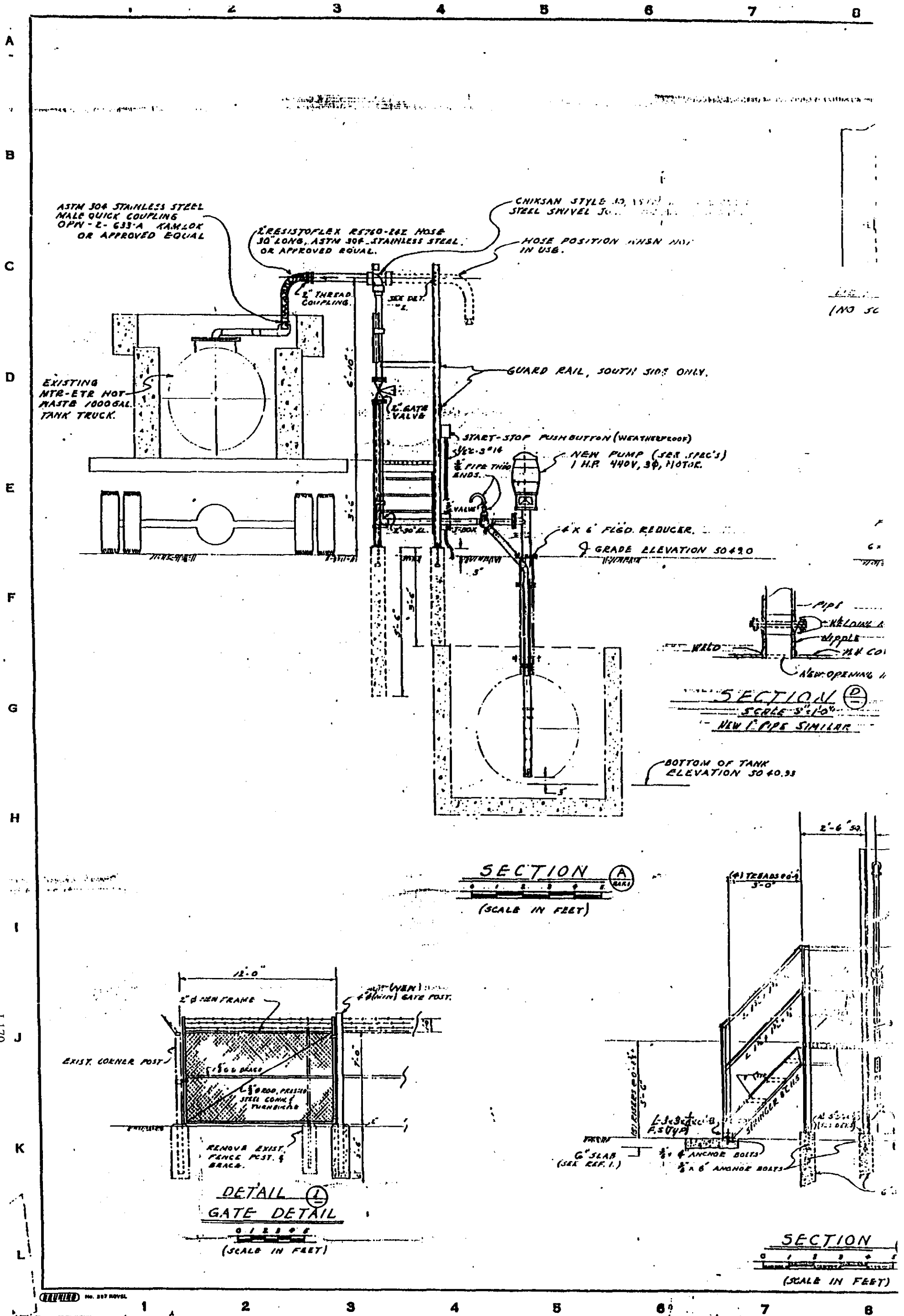
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REF. NO.	TITLE	NO.	DATE
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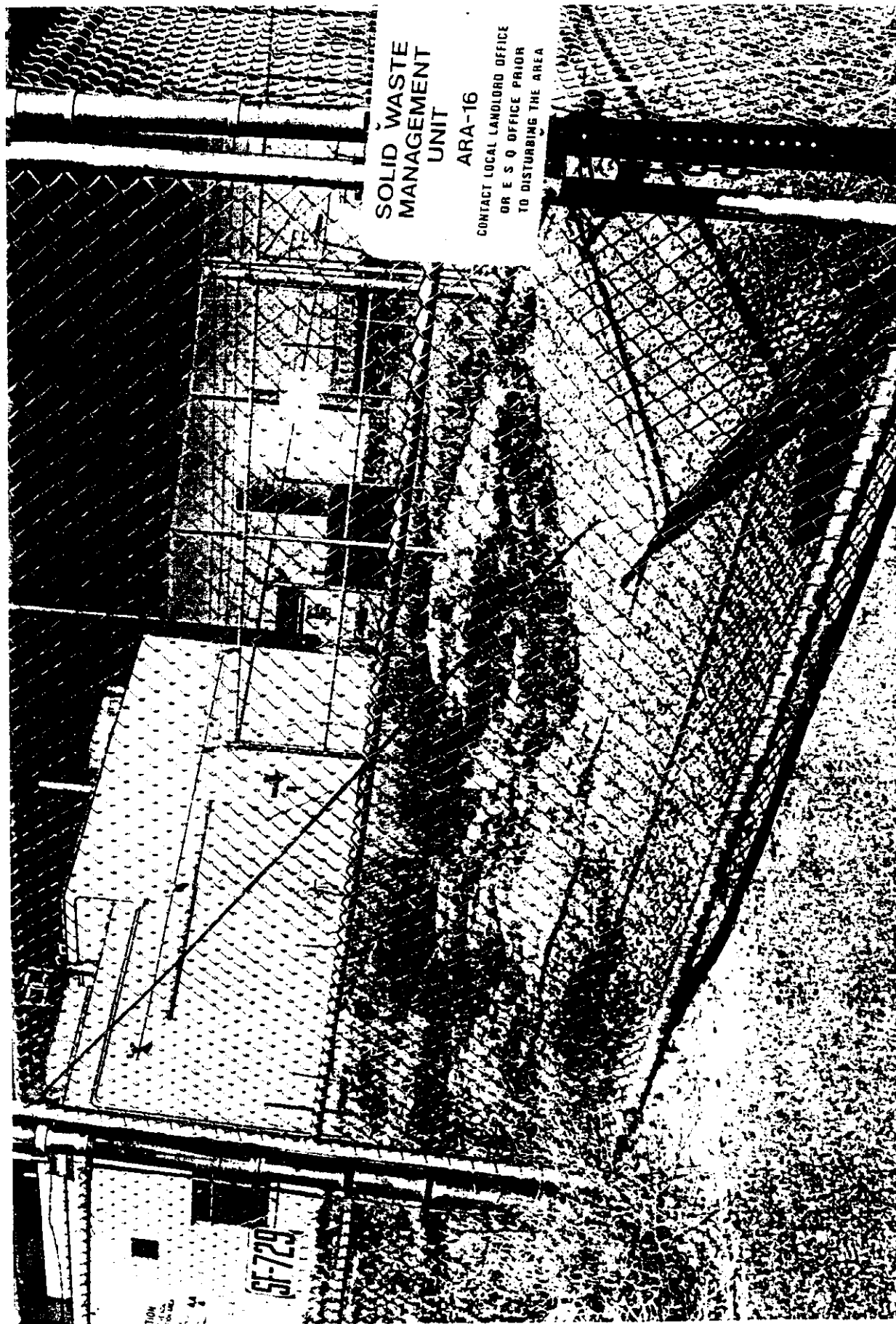
BY		DATE	
DRAWN	ENR	6-30-61	
CHECKED	REB	7-11-61	
APPROVED	CSG	8-1-61	
APPROVED	GVM	8-3-61	
APPROVED	RJB	1-3-62	
APPROVED	SE	1-4-62	
SCALE	AS SHOWN		
DATE	8-4-61		

AS BUILT

3	1/2" HOLE	1/2" HOLE	1/2" HOLE
2	1/2" HOLE	1/2" HOLE	1/2" HOLE
1	1/2" HOLE	1/2" HOLE	1/2" HOLE
NO.	DATE	DESCRIPTION	REVISION
ARE AREA	STRUCT 729	WASTE TANK EMPTYING SYSTEM	PIPING & ELECTRICAL SECT.
F. C. YORKELSON CO. ENGINEERS 88 EAST FIRST SOUTH SALT LAKE CITY, UTAH			
U. S. ATOMIC ENERGY COMMISSION IDAHO OPERATIONS OFFICE IDAHO FALLS, IDAHO			
DWG. NO.	842-AREA/SP-729-P&E-2		

AKA-16 NY# 10



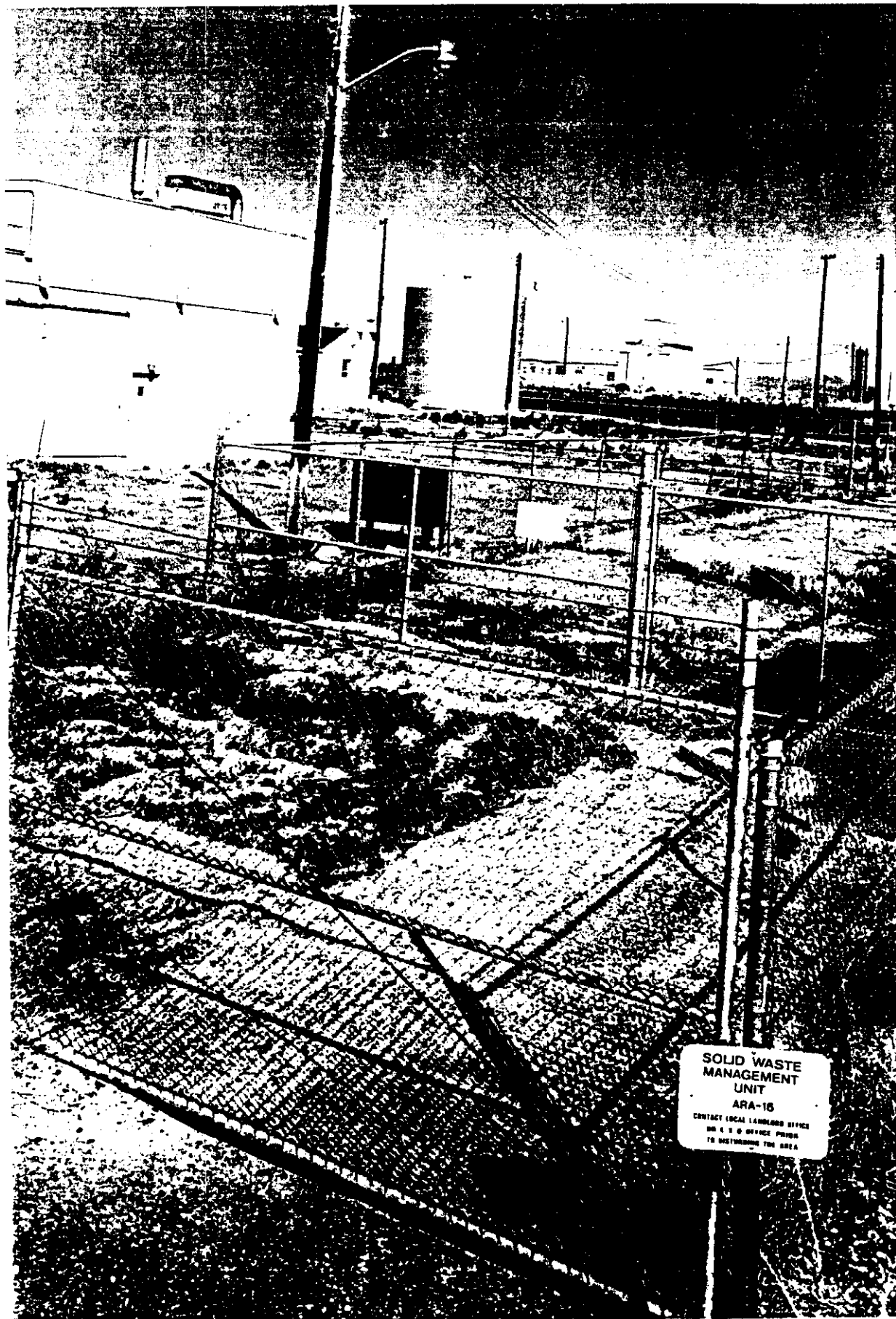


SOLID WASTE
MANAGEMENT
UNIT

ARA-16

CONTACT LOCAL LANDLORD OFFICE
OR E S O OFFICE PRIOR
TO DISTURBING THE AREA

5F-729



SOLID WASTE
MANAGEMENT
UNIT
ARA-16
CONTACT LOCAL LANDFILL OFFICE
FOR SERVICE PRIOR
TO ENTERING THE AREA

March 3, 1993

Report of telephone conversation - K.J. Holdren to Tom Thiel.

Tom said ARA-729 is scheduled for D&D in 1996.

John

Post-it® brand fax transmittal memo 7671	
# of pages 1	
to	Charlie Dietz
from	John
Co.	
Dept.	
Phone #	6-6901
Fax #	6-4122

ARA-16
ref # 13

J-174